REMARKS

By virtue of this request for extension of time and the requisite fees, this communication timely responds to the Office Action dated October 19, 2005.

Claims 1, 4-7, 9-17, and 19-41 were pending and under final rejection. Applicants propose to cancel claims 1, 6, 11-15, 17-21, 23, 26-37, and 40-41; amend claims 4, 7 and 9, and add new claims 42-43. The claim amendments merely replace the recitation of the concentrations of the various ingredients of the claimed alloy with "a modified AA5083 containing ...", noting the differences with regard to the Zn and Cu concentrations etc. The concentrations of the ingredients of AA5083 are well-known to those skilled in the art (see e.g. U.S. Patent No. 6,342,113 (Haszler et al., cited in the Office Action), at Col. 1), and are described in the instant specification at e.g. paragraph [00041]. It is respectfully submitted that the claim amendments are adequately supported by the application as originally filed.

It is further respectfully submitted that the claim amendments do not raise any new issue of patentability because the issues at hand relate to the concentration of Mg, Zn and Cu in the claimed alloy, which issues have been fully searched and discussed. In addition, as will be made clear below, as amended, the claims are free of the prior art and would place the instant application in condition for allowance. Accordingly, applicants respectfully request entry of the above claim amendments and favorable reconsideration of the claims.

Claims Rejections – 35 U.S.C. §102

The Office Action rejected the pending claims under 35 U.S.C. §102(b) as being anticipated by Haszler (US 6,342,113). Applicants respectfully submit that this rejection has been overcome by the above claim amendment.

Specifically, the Office Action cited the alloy described in Haszler at col. 2, lines 64-66, col. 3, lines 1-9, which alloy comprises, *inter alia*, 5-6% by wt. of Mg. In contrast, the claimed

alloy comprises no more than 4.9% of Mg. The Office Action further cites Example A9 of Haszler *et al.*, which comprises less than 0.01% Cr. In contrast, the claimed alloy, being based on AA5083, comprises 0.05-0.25% of Cr.

Furthermore, the claimed alloy contains Zr in the amount of 0.05% or less, and the examples cited both contain more Zr.

The Office Action further rejected the pending claims under 35 U.S.C. § 102(a) over a publication by Carroll *et al.* (2001), entitled "Effects of minor Cu additions on a Zn-modified Al-5083 alloy" (hereinafter "Carroll 2001"). The Office Action stated that the Declaration under 37 C.F.R. § 1.132, filed August 1, 2005, by each and every inventor of the instantly claimed invention to be "insufficient" to overcome the rejection. Applicants respectfully submit that the Office Action is incorrect in this regard and request withdrawal of all claim rejections based on Carroll 2001.

Carroll 2001 lists Carroll, Mills, Daehn and Gouma as coauthors. All but Gouma is an inventor of the present application. The present invention further names Buchhiet, Morere, Goodrich and Kobe as additional co-inventors. By the Declaration filed August 1, 2005, the inventors established that Gouma did not make any inventive contribution to the disclosure of Carroll 2001.

The Office Action asserts that the Declaration did not establish that the additional co-inventors, that is, Buchheit, Morere, Goodrich and Kobe, "did not contribute to the instant claimed invention." Applicants respectfully submit that there is no need to make such an establishment. Quite to the contrary, applicants cannot make such a statement, because it would render the instant inventorship improper.

For the removal as prior art, e.g. under 35 U.S.C. § 102(a) or § 102(e), of a reference which does not constitute a statutory bar under 35 U.S.C. § 102(b), the law only requires that it

be established that the disclosure in the reference is not the work of "another", but the work of the instant inventor(s). This the inventors have done by the Declaration, and the Examiner agrees.

The patent application may contain additional inventive subject matter, not disclosed in the reference, which may be contributed by "additional co-inventors," either jointly or separately. So long as it is clear that the disclosure of the reference is the inventors' own work, there is no need to make additional inquiry (provided of course other provisions of Title 35 are satisfied). For example, it is possible that the "additional inventors" made contributions to the published article but were not named co-authors, or that they contributed only to those claims that are not implicated by the article. But these questions are irrelevant because there is no need to make such determinations.

In this regard, *In re Carreira*, 532 F.2d 1356 (CCPA 1976), is instructive. The issue there was the removal of patent references under 35 U.S.C. § 102(e) by § 1.132 declarations, but the standard is the same in the context of 35 U.S.C. § 102(a). In *Carreira*, each of two cited reference patents lists one of the two inventors, who were also co-inventors of the rejected application. The rejected application listed additional co-inventors. The fact that the rejected application listed additional co-inventors was never an issue in that case, and there was never an indication by the PTO or the court that there was a need for the applicants to establish that the additional co-inventors did not make a contribution to the claimed invention.

In short, because the invention disclosed in Carroll 2001 was made by the instantly named inventors, by definition the instantly claimed definition was not "known or used by others, or patented or described in a printed publication *before* the invention by the applicant for patent" under 35 U.S.C. § 102(a).

Accordingly, applicants respectfully submit that Carroll 2001 is not prior art under 35 U.S.C. § 102(a) and all claim rejections based thereon should be withdrawn.

Claim Rejections – 35 U.S.C. §103

The Office Action further rejected the claims under 35 U.S.C. § 103(a) as obvious over Haszler *et al.* Applicants respectfully submit that these rejections have been rendered moot in view of the claim amendments above and remarks below.

As an initial matter, as amended, the claims are not *prima facie* obvious because the ranges of concentration of the ingredients no longer overlap with those disclosed in Haszler *et al.* More importantly, the boundaries of the ranges no longer touch.

Furthermore, applicants respectfully submit that Haszler *et al.* does not suggest or provide any motivation to modify the concentration of the various metal ingredients to arrive at the claimed alloy.

As previously discussed, Haszler *et al.* relates to alloys with enhanced strength (see e.g. Col. 2 Line 51 to 57). For this purpose, a higher Mg level and the presence of Zr are required in the alloy. Mg is widely known and used in aluminum alloys to increase strength through the process of "work hardening" during cold work on the alloy (see for example Col. 3, lines 60-65 of Haszler *et al.*). The effects of Mg on the strength of aluminum alloys are also clearly illustrated in J. E. Hatch, Aluminum: Properties and Physical Metallurgy, ASM International (copy of relevant pages attached as Attachment 1). Figure 9 on page 213 of this reference specifically illustrates the effect of increased Mg content on the strength of 5xxx series of alloys.

In contrast, the present invention modifies an AA5083 alloy to produce corrosion resistant particles on the grain boundaries. The inventors discovered that this was achievable by adjusting the composition of the AA5083 alloy with respect to Zn and Cu levels to form a quaternary Al-Mg-Zn-Cu Tau phase (rather than the usual ternary Al-Mg-Zn phase) when the alloy was subject to sensitization at 80 to 200°C. Thus the intent of the two inventions was different.

Again, there is simply no teaching or suggestion in the prior art that the alloy of Haszler *et al.* should be modified to arrive at the presently claimed alloys with improved corrosion resistance.

The Office Action asserts that the formation of quaternary Tau is inherently taught in Haszler. Applicants respectfully submit that this is not the case. As made clear by the above claim amendments, the instantly claimed alloys differ in composition from those disclosed in Haszler. These compositional differences lead to the structural differences which impart unexpected, superior corrosion resistance of the instantly claimed alloys.

In this regard, particularly notable is the difference between the alloy D1 of Haszler *et al.* and the instantly claimed invention. As discussed in applicants' previous response, Example 3 of Haszler *et al.* teaches that a standard AA5083 alloy (composition is given in Column 1 of Haszler *et al.*), when exposed to a temperature of 100 °C forms intermetallics at the grain boundaries and the longer the exposure the more extensive these become, making the material susceptible to stress corrosion cracking (SCC). Example 3 then teaches that an alloy designated as D1 does not show this behavior. Alloy D1 actually has a Mg content of 5.2%, higher that that of AA5083, and a much higher Zn content. Significantly, however, the Cr concentration is less than 0.01%, below that of AA5083, or that of the instantly claimed alloys.

Haszler *et al.* then teaches that such an alloy when exposed to a 100 °C temperature develops intermetallics within the grain and that a continuous network of precipitates does not form at the grain boundaries even after prolonged exposure at 100 °C (see Column 10 Line 55 to 56). In other words, Haszler *et al.* teaches how to avoid the formation of continuous grain boundary precipitation.

In contrast, the instant claims are directed to alloys that have quaternary Tau phase at the grain boundaries. Thus, Haszler *et al.* teaches away from the instantly claimed invention. The present invention does not avoid formation of grain boundary species, but renders them inactive

with respect to SCC. This is accomplished by adding to AA5083 zinc and copper, while limiting the concentration of Cr if necessary, allowing the formation of Al-Mg-Zn-Cu quaternary Tau phase.

The inventors surprisingly discovered that the quaternary Tau phase so formed at the grain boundaries according to the present invention does not promote SCC, unlike those formed in AA5083. In other words, Example 3 of Haszler *et al.* teaches that inhibition of the formation of the grain boundary phase solves the SCC problem, whereas the instant invention teaches the formation of grain boundaries of a different kind that is electrochemically inactive and hence solves the SCC problem.

In summary, applicants respectfully submit that all claims are now in condition for allowance and earnestly solicit an early indication from the Examiner to that effect. If there should be any questions, a telephone call to the undersigned at 202-508-3450 would expedite the proceedings for all concerned.

Applicant encloses herewith a check in the amount of $450.00 to cover the fees due for a two month extension of time. Should any additional fees be deemed necessary, the Commissioner is hereby authorized to please charge them to our Deposit Account No. 11-0553.

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Respectfully submitted,

By _____

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